SOCIODEMOGRAPHIC DETERMINANTS OF HEALTH LITERACY AMONG UNIVERSITY STUDENTS OF HEALTH SCIENCES IN KOSOVO

SOCIODEMOGRAFSKE DETERMINANTE ZDRAVSTVENE PISMENOSTI MED UNIVERZITETNIMI ŠTUDENTI ZDRAVSTVENIH VED NA KOSOVU

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ABSTRACT

Keywords:

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Objective: Our objective was to assess the level and sociodemographic correlates of health literacy (HL) among university students of health sciences in Kosovo.

Methods: A cross-sectional study was conducted in Kosovo during February-April 2024, including 470 students of health sciences from the universities of Prishtina and Gjakova (≈86% females; mean age: 20.7±2.7 years; response rate: 70%). The internationally standardised European Health Literacy Survey Questionnaire (HLS-EU-Q) was self-administered, along with information on sociodemographic factors. Binary logistic regression was used to assess the independent sociodemographic correlates of HL.

Results: Only 7% of the students exhibited "inadequate and/or problematic" HL, whereas about 93% of participants displayed "sufficient and/or excellent" HL. In multivariable-adjusted binary logistic regression models, "inadequate and/or problematic" HL was strongly and positively associated with the male gender only (OR=3.6, 95%CI=1.5-8.9).

Conclusions: We evidenced a relatively high general HL level among university students of health sciences in Kosovo, especially among females. Enhancing HL among future health professionals could guide policies that prioritise embedding health education and resources into higher education institutions, potentially improving students' health behaviours and health outcomes, as a major prerequisite for their future work with patients and communities.

IZVLEČEK

Ključne besede:

European Health Literacy Survey Questionnaire (HLS-EU-Q)

zdravstvena pismenost

Kosovo

sociodemografski dejavniki

univerzitetni študenti zdravstvenih ved

Cilj: Naš cilj je bil oceniti stopnjo in sociodemografske korelate zdravstvene pismenosti med univerzitetnimi študenti zdravstvenih ved na Kosovu.

Metode: Med februarjem in aprilom 2024 smo na Kosovu izvedli presečno študijo, ki je vključevala 470 študentov zdravstvenih ved na univerzah v Prištini in Đakovici (≈86 % žensk; povprečna starost: 20,7 ± 2,7 leta; stopnja odziva: 70 %). Uporabili smo mednarodno standardiziran samoocenjevalni vprašalnik European Health Literacy Survey Questionnaire (HLS-EU-Q), skupaj s podatki o sociodemografskih dejavnikih. Za ocenjevanje neodvisnih sociodemografskih korelatov smo uporabili binarno logistično regresijo.

Rezultati: Samo pri 7 % študentov smo zaznali »nezadostno in/ali problematično« zdravstveno pismenost, približno 93 % udeležencev pa je izkazalo »zadostno in/ali odlično« zdravstveno pismenost. V modelih multivariatne prilagojene binarne logistične regresije je bila »nezadostna in/ali problematična« zdravstvena pismenost močno in pozitivno povezana samo z moškim spolom (RO = 3,6, 95-% IZ = 1,5-8,9).

Zaključki: Med univerzitetnimi študenti zdravstvenih ved na Kosovu, zlasti pri ženskah, smo dokazali razmeroma visoko splošno zdravstveno pismenost. Povečanje zdravstvene pismenosti med bodočimi zdravstvenimi delavci bi lahko postalo vodilo politik, ki dajejo prednost vključitvi zdravstvenega izobraževanja in virov v visokošolske ustanove, kar bi lahko izboljšalo z zdravjem povezano vedenje in zdravstvene izide študentov, ki so pomemben pogoj za njihovo prihodnje delo z bolniki in skupnostmi.

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1 INTRODUCTION

The Health Literacy (HL) concept was introduced into the field of public health more than four decades ago (1). HL is a multifaceted construct that has led to the development of many definitions throughout history (2-4). According to an integrative approach, the HL construct consists of four dimensions denoting four different types of competencies (ability to: access, obtain or search for relevant health information; understand obtained health information; appraise or process health information, and apply health information to make decisions for improving health) (4, 5). These four HL dimensions are considered assets that are revealed in the domains of healthcare, disease prevention and health promotion (4, 5).

A systematic review has identified over 250 distinct definitions of HL (6), highlighting the enormous complexity of this concept. Yet, in general, HL refers to people's ability to find, understand and use health information for making appropriate health decisions (7). From this perspective, HL encompasses the comprehension and assessment of the adequacy of health-related information, proper medication usage, utilisation of health services, and decision-making regarding self-care and prompt and effective management of various health conditions (8, 9). From a public health viewpoint, the HL concept also includes dimensions which go beyond individual competencies and the medical context (4, 10). From this perspective, Nutbeam has coined a classical model distinguishing between three typologies of HL: functional HL, interactive HL, and critical HL (10), representing different levels of knowledge and skills that progressively support greater autonomy and personal empowerment in the decision-making process related to health matters (4, 10). Based on this public health viewpoint, attempts were made to develop a comprehensive model for measuring HL in general populations, addressing HL as a quite multidimensional and complex concept (11). Hence, the public health perspective of HL was taken forward by Sorensen et al. by focusing not only on the individual's participation in healthcare but also on people's prevention and health promotion activities, thereby considering HL a multifaceted concept (4, 5).

Conversely, it has been convincingly shown that low levels of HL constitute an important risk factor for suboptimal health (6) resulting in the following outcomes: unhealthy behaviours (8, 12); misuse of medications (13); lower participation in screening programmes (4); inadequate disease management skills (14) and deficiency in access to health services which eventually increase morbidity and mortality rates (15, 16), jeopardise quality of life (17) and increase the overall costs of societies (8, 18).

Numerous determinants of HL have been identified, including sociodemographic factors such as age, gender, educational attainment or socioeconomic status, along with other psychosocial and cultural factors (4-6, 8, 19, 20). In general populations, inadequate HL is more prevalent among older individuals and those with lower socioeconomic status, whereas studies have largely not found consistent differences between males and females (4-6, 19). Regarding student populations, in general, levels of inadequate HL are seemingly higher in males (20) and younger individuals (8). Hence, a recent study has reported that the odds of male gender were eight times higher among students with limited HL compared with their counterparts with adequate HL levels (20). Conversely, another recent study has reported that older students had 11% higher odds of exhibiting sufficient HL levels compared with younger individuals (8).

Kosovo, a middle-income country constituting the newest state in Europe, proclaimed its independence in 2008 following a long-standing and devastating war with Serbia (21). Since its independence, Kosovo has been undergoing a rapid process of transformation and deep reforms in all sectors (21). The estimated population of Kosovo consists of about 1.8 million inhabitants, with an average life expectancy of 76.7 years (22, 23), which is one of the lowest in the region (24). Non-communicable diseases (NCDs) affect a large share of the population, with about 22% of individuals aged 18 years and above reporting a chronic disease in 2017 (22, 23). Cardiovascular diseases are the primary cause of the overall burden of disease, followed by cancer and respiratory diseases (22).

However, the information about the levels and determinants of HL in the populations of Western Balkan countries including Kosovo is scarce, especially among university students of health sciences. Measurement of HL among university students in various branches of health sciences is crucial for ensuring they can effectively comprehend and apply health information in their future professional practices, ultimately enhancing patient care and population health outcomes.

With the aim to assess whether future healthcare professionals in Kosovo may need additional training in the field of HL and where there are gaps, the objective of our study was to assess the level of HL among the observed population group as well as define its determinants.

2 METHODS

A cross-sectional study was conducted in Kosovo during February-April 2024, including a representative sample of students attending different branches of health sciences from the universities of Prishtina (the capital) and Gjakova (one of the main regions in Kosovo).

2.1 Sampling and data collection

We decided to invite all students (N=671) from the universities of Prishtina and Gjakova attending studies in one of the following branches: nursing, health management, physiotherapy, or public health.

The survey consisted of self-administration of an anonymous and structured pen-and-paper questionnaire to all students who agreed to participate. Students were invited to fill in the questionnaires during classes by their respective lecturers, without being offered any incentives, while being informed about the aim and procedures of the survey and being expressly guaranteed the anonymity of the survey and the subsequent aggregated data analysis.

2.2 Measurement instruments

The questionnaire included an assessment of the HL and sociodemographic information of participating students. Assessment of HL was based on the internationally standardised European Health Literacy Survey Questionnaire (HLS-EU-Q) (20, 25, 26), which had been already validated in Albanian settings (27). The HLS-EU-Q consists of 47 items measuring students' ability to access, understand, appraise and apply health information across three health domains (healthcare, disease prevention and health promotion) (25, 26). Each item of the instrument was rated on a 4-level Likert scale: "very easy" (score: 4), "fairly easy" (score: 3), "fairly difficult" (score: 2), and "very difficult" (score: 1).

2.3 Observed phenomena

2.3.1 Observed outcome and its derivation

According to the recommendations of developers of the instrument, first a summary score was calculated for each participant (HL-score), ranging from 0-50 (20, 28). Next, the HL-score was grouped into four categories representing four HL levels (HL-level): inadequate HL level (scores: 0-25), problematic HL level (scores: >25-33), sufficient HL level (scores: >33-42), and excellent HL level (scores >42-50). Finally, for the purposes of this study, the four categories were combined into the following two categories: inadequate/problematic HL (scores: 0-33), and sufficient/excellent HL scores (>33-50) (20, 28). Therefore, the observed outcome variable in this study consisted of a binary variable "inadequate/problematic HL" with the values "0=no" and "1=yes".

2.3.2 Explanatory variables

The explanatory variables included all sociodemographic characteristics of study participants: gender (males vs. females), age (18-19, 20, 21, all vs. ≥22 years), university institution (University of Prishtina vs. University of Gjakova), branch of study (health management and public health vs. nursing and physiotherapy), place of residence (urban vs. rural areas), marital status (married vs. single), current employment status (employed vs. not employed), and economic level (not good vs. good).

2.4 Statistical analysis

Standard descriptive statistics methods were used to describe the variables, while binary logistic regression (direct method) was used to assess the association of 'inadequate/problematic HL' with the sociodemographic characteristics of study participants. A simple method with a single reference category was used to create dummy variables. Odds ratios (ORs), their respective 95% confidence intervals (95% CIs) and p-values were calculated. A Hosmer-Lemeshow test was used to assess the goodness-of-fit of the multivariable-adjusted logistic regression models (29). SPSS (version 19.0) was used for all the statistical analyses.

2.5 Ethical considerations

The study was approved by the Ethics Committee of the National Institute of Public Health of Kosovo (Decision: 01/1531, date: 28-12-2023) and by the Ethics Committee of the Faculty of Medicine, University of Gjakova (Decision: 006/82, date: 12-01-2024).

3 RESULTS

3.1 Response rate and description of participants

Of all the invited students (N=671), 113 (≈17% of the target population) did not complete the survey, while a further 88 participants (13% of the total) provided incomplete responses, which were excluded from the analysis. There were no significant differences among respondents and non-respondents regarding gender and age distribution.

The study sample included in the statistical analyses consisted of 470 students (405 females, or ≈86% of the overall study sample – Table 1). The final response rate in this study was: 470/671=70%. All other characteristics are shown in Table 1.

The HL-score results showed that the mean value was 40.7±5.0, while the HL-level results showed that out of 470 students, 3 (0.6%) of them exhibited an inadequate, 30 (6.4%) exhibited problematic, 239 (50.9%) exhibited sufficient, and 198 (42.1%) exhibited an excellent HL-level. Overall, only 33 (7.0%) of the students exhibited 'inadequate/problematic HL'.

Table 1. Sociodemographic characteristics of a representative sample of university students of health sciences from Kosovo in 2024 (N=470).

Sociodemographic characteristics	N (%)
Gender	
Males	65 (13.8) [a]
Females	405 (86.2)
Age	
18-19 years	118 (25.1)
20 years	149 (31.7)
21 years	115 (24.5)
≥22 years	88 (18.7)
University	
Prishtina	231 (49.1)
Gjakova	239 (50.9)
Branch of study	
Nursing	364 (77.4)
Health management	19 (4.0)
Physiotherapy	22 (4.7)
Public health	65 (13.8)
Residence	
Urban areas	198 (42.1)
Rural areas	272 (57.9)
Marital status	
Single	446 (94.9)
Married	24 (5.1)
Employment status	
Students not employed	439 (93.4)
Students employed	31 (6.6)
Economic level	
Good	317 (67.4)
Not good	153 (32.6)

Legend: [a] Absolute numbers and their respective column percentages (in parentheses).

Table 2. Association of inadequate/problematic health literacy with sociodemographic determinants; results from crude (unadjusted) logistic regression models.

Variable	OR (95%CI) [a]	P
Gender		
Female	1.00 (reference)	
Male	3.55 (1.63-7.72)	0.001
Age		0.759 (3) [b]
≥22 years	1.00 (reference)	-
18-19 years	0.73 (0.26-2.02)	0.541
20 years	0.80 (0.31-2.06)	0.640
21 years	0.55 (0.18-1.65)	0.286
University		
Gjakova	1.00 (reference)	
Prishtina	1.89 (0.91-3.94)	0.089
Branch of study		
Nursing and Physiotherapy	1.00 (reference)	
Health Management and Public Health	0.62 (0.21-1.80)	0.375
Residence		
Rural areas	1.00 (reference)	
Urban areas	1.16 (0.57-2.36)	0.688
Marital status		
Single	1.00 (reference)	
Married	3.93 (1.37-11.3)	0.011
Employment		
Not employed	1.00 (reference)	
Students employed	2.82 (1.01-7.91)	0.048
Economic level		
Good	1.00 (reference)	
Not good	1.20 (0.57-2.51)	0.628

Legend: [a] Odds ratios (OR): "inadequate/problematic" health literacy (HL) vs. "sufficient/excellent" HL; [b] Overall p-value and degrees of freedom (in parentheses).

3.2 Univariate analysis of association of inadequate/problematic HL with sociodemographic determinants

In crude/unadjusted binary logistic regression models (Table 2), the results showed a statistically significant association between the observed outcome and gender, marital status and employment status. Additionally, the association between inadequate/problematic HL and university institution was marginally statistically significant.

3.3 Multivariate analysis of association of inadequate/problematic HL with sociodemographic determinants

Upon simultaneous adjustment for all sociodemographic characteristics (Table 3), the positive association of the observed outcome with gender persisted. The odds even slightly increased. The only determinant for which the odds increased in the multivariate analysis, besides gender, was university, although the association was only marginally statistically significant. Conversely, the relationships with marital status and employment were no longer statistically significant and their odds considerably decreased (Table 3).

The model of the multivariate association of inadequate/problematic health literacy with sociodemographic determinants as a whole was statistically significant, as the HL test of goodness-of-fit showed that the model fits the data well (P=0.790).

Table 3. Multivariate association of inadequate/problematic health literacy with sociodemographic determinants; results from binary logistic regression models [a].

Variable	OR (95%CI) [b]	P
Gender		
Female	1.00 (reference)	
Male	3.65 (1.49-8.92)	0.005
Age		
≥22 years	1.00 (reference)	-
18-19 years	1.01 (0.33-3.15)	0.981
20 years	0.95 (0.33-2.80)	0.932
21 years	0.53 (0.16-1.74)	0.293
University		
Gjakova	1.00 (reference)	
Prishtina	2.07 (0.86-4.99)	0.107
Branch of study		
Nursing and Physiotherapy	1.00 (reference)	
Health Management and Public Health	0.59 (0.16-2.20)	0.432
Residence		
Rural areas	1.00 (reference)	
Urban areas	1.08 (0.52-2.27)	0.831
Marital status		
Single	1.00 (reference)	
Married	1.88 (0.48-7.43)	0.369
Employment		
Not employed	1.00 (reference)	
Students employed	1.96 (0.54-7.16)	0.311
Economic level		
Good	1.00 (reference)	
Not good	1.20 (0.55-2.61)	0.641

Legend: a Models adjusted simultaneously for all variables presented in the table. Hosmer-Lemeshow test: chi-square=4.69; df=8; P=0.790; b Odds ratios (OR): "inadequate/problematic" health literacy (HL) vs. "sufficient/excellent" HL.

4 DISCUSSION

4.1 Salient findings

The main finding of this study consists of a relatively high general HL level among university students in Kosovo, especially those from the University of Gjakova. Hence, only 7% of the students exhibited "inadequate and/or problematic" HL. Overall, female students had a remarkably higher HL level compared to males, a finding which was quite consistent and persisted upon adjustment for a wide range of other sociodemographic characteristics. Conversely, economic level, an indicator of social status, was not a significant determinant of general HL.

4.2 Comparison with other studies

The general HL level in our study is a bit higher than a previous report from Albania, which consisted of a similar cross-sectional study applying the same HL instrument in a sample of students pertinent to a range of health sciences (nursing, physiotherapy, midwifery and laboratory technicians) (20). Furthermore, according to this recent report (20), about half of Albanian students had sufficient HL (which is very similar to our estimate), while an excellent HL level was higher than in our study. Hence, on the face of it, the HL levels among university students from Kosovo are higher compared to their counterparts from Albania attending similar study branches (pertinent to health sciences). Apparently, Kosovo has developed a robust curriculum for health sciences that emphasises HL, including practical skills and knowledge about navigating health information (24). Also, in Kosovo, cultural attitudes toward health, well-being and education could play a significant role in promoting HL. Additionally, students in Kosovo may have better access to modern health information technologies, such as e-health platforms or digital libraries, which may engage them more effectively with up-to-date health information, boosting their HL levels. However, our findings on the seemingly high HL levels should be interpreted with caution and replicated in future studies in Kosovo.

The prevalence of adequate (sufficient or excellent) HL in our study was higher than the estimate among Albanian students, as well as among nursing students in Namibia (30). A study including Spanish and French students from different branches reported that only about two in five students had sufficient HL (31). However, nursing students exhibited the best HL levels in that study, which used a different HL measuring scale (31), making it difficult to compare with our study and the previous one from Albania (20). Yet, methodological considerations aside (including especially different measuring HL scales), previous literature on nursing students indicates that around one

third of the surveyed students have problematic or limited HL (31, 32). A recent report from Spain (8) indicated that few nursing students had an inadequate HL level, while one third of them had a problematic HL level.

Regarding another aspect, our finding related to a higher HL level among females compared to males is compatible with a previous study from Albania (20) which reported that, in multivariable-adjusted binary logistic regression models, the only factor significantly increasing the likelihood of limited HL was male gender. Seemingly, females tend to engage more with health-related information in Albanian settings, which may be rooted in their traditional societies imposing certain cultural and social roles. From this perspective, females in Albania and Kosovo may assume more responsibility for health management within families, such as caring for children and elderly relatives. This role could lead to a greater focus on acquiring health knowledge and skills, thereby enhancing their HL levels.

Furthermore, the large European HL survey, employing the same measuring instrument used in our study (HLS-EU-Q), has reported a weak yet positive relationship between female gender and HL level (25, 26). However, a recent study from Spain has reported opposite findings, with female students exhibiting higher levels of insufficient HL (8). On the other hand, some other studies conducted on nursing students have not reported significant gender differences in HL levels (32, 33).

In a previous study from Albania, low social and economic status also increased the likelihood of limited HL, but these associations were not statistically significant in multivariable-adjusted models (20). In our study, economic level was not significantly associated with HL levels even in crude (unadjusted) models.

Of note, the higher prevalence of "inadequate and/or problematic" HL among students who were married compared with those who were single evidenced in our study is explained by the strong confounding effect of gender, with male students (exhibiting lower HL levels) reporting a much higher degree of being married than their female counterparts (displaying significantly higher HL levels). As a matter of fact, upon multivariable adjustment for the other sociodemographic factors including gender, there was no evidence of a significant relationship of HL with marital status.

Conversely, our findings on a positive relationship of age with higher HL levels are intuitive and in line with previous reports from Albania and other countries (8, 20, 34-36). As a matter of fact, in studies involving student populations, older age indicates a more advanced academic year, which has been shown to exhibit a direct linear association with higher HL levels (8, 34-36).

4.3 Strengths and limitations

This study may have some limitations. The first and probably the most important limitation is that the observed outcome is relatively rare. This posed some technical difficulties in the analysis, especially in determinants that had some rare categories (e.g. male gender). However, important results were obtained for planning potential interventions despite this limitation. Second, there is a possibility of selection bias (due to non-response and/or non-valid information provided by almost 30% of the targeted population). Nevertheless, the achieved response rate still provided valuable results. Next, there is a possibility of information bias (likelihood of differential reporting between various sociodemographic groupings). The next potential limitation refers to the measurement of socioeconomic status, which should have combined various economic and social factors of participating students (such as the level and quality of education attained before attending the current studies in health sciences, income, wealth and social status). Finally, the survey design is cross-sectional which does not allow inferences about causality.

Conversely, our study has important strengths. First, for participation in the survey the entire targeted population was invited, and second, the study instrument used was based on a standardised international instrument, previously validated in Albanian settings (27).

4.4 Implications for research and practice

Our study indicates a need to strengthen HL among male students in Kosovo and that the problem seems to be greater at the University of Prishtina. A potential explanation for this regional difference may be the educational environment (curriculum differences, as well as resources and faculty expertise), along with gender dynamics and cultural norms which could influence attitudes towards HL (e.g., different traditional views in these regions may affect how male students perceive health education).

At a broader level, health professionals are essential for patient care at all levels of healthcare services (37, 38). An important component of their work consists of empowering patients and enabling prompt and effective self-care by enhancing their HL skills (37). Therefore, preparation of upcoming health professionals is of paramount importance for addressing the difficulties and needs of patients with inadequate HL levels (37). From this perspective, our study indicates that proper education and training especially of male students from different branches of health sciences is crucial for ensuring they can effectively comprehend and apply health information in their future professional practices, ultimately enhancing patient care and population health outcomes.

Conversely, from a research viewpoint, future studies on HL among health sciences students should explore particularly the impact of curriculum design and cultural factors on HL levels to inform targeted educational interventions for upcoming health professionals.

5 CONCLUSIONS

Our study provides important evidence on the levels and sociodemographic determinants of HL among university students of health sciences in Kosovo, a country which is currently implementing complex and multifaceted political and socioeconomic reforms.

Enhancing HL among university students of health sciences could guide policies that prioritise embedding health education and resources in higher education institutions, potentially improving students' health behaviours and health outcomes, as a major prerequisite for their future work with patients and communities at large.

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CONFLICTS OF INTERESTS

None declared.

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ETHICAL APPROVAL

This study was approved by the Ethics Committee of the National Institute of Public Health of Kosovo (Decision: 01/1531, date: 28-12-2023) and by the Ethics Committee of the Faculty of Medicine, University of Gjakova (Decision: 006/82, date: 12-01-2024).

AVAILABILITY OF DATA AND MATERIALS

All data and materials used in this study are available upon reasonable request.

AUTHORS' CONTRIBUTIONS

Naim Jerliu, Haxhi Kamberi and Genc Burazeri contributed to the study conceptualisation and design, analysis and interpretation of the data and writing of the article. Iris Mone and Pranvera Krasniqi commented comprehensively on the manuscript. All authors have read and approved the submitted manuscript.

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